

Review Article

PSYCHOSOMATIC FACTORS IN PERIODONTAL DISEASES

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INTRODUCTION :

Periodontal disease was recognised clinically and described by Fauchard as early as 1746. Since then, significant advances have been made in its diagnosis and in understanding of its etiology and treatment. It is now generally accepted that periodontal disease is the result of a complex of local and systemic factors and that no single factor can initiate the disease process. Treatment of periodontal disease has been directed largely towards eliminating local mechanical factors, and with considerable success in many cases; in other instances, the disease process persists or reappears, indicating that other etiologic factors are operant. In recent years, the role of psychosomatic factors in the etiology of periodontal disease has been given increasing attention. The clinical management of any disease process depends on an accurate grasp of its etiology; once this is known, treatment can be directed toward eliminating the causative factors. Thus it is essential to determine whether psychosomatic factors give rise to pathologic processes in the periodontal structures.

This paper will deal with this controversial issue so that the practitioner may become aware of these factors and take them into consideration in his treatment planning.⁽²³⁾

CONCEPT OF STRESS IN PSYCHOSOMATICS :

"Psychosomatics" is a relatively new term which has been defined as relating to or involving the influence of emotional stress or conflict on a somatic area, organ or bodily system. In other words, it is the science which deals with the interrelationships between mental-emotional and somatic processes, especially those in which intrapsychic conflict influences somatic symptomatology. Thus psychosomatics constitutes a host of psychologic, emotional or mental stress affecting body tissues. The concept of stress, although long known in the field of medicine, was elucidated by Selye in 1936. He observed that when the body is subjected to a variety of stressors, nonspecific somatic changes commonly occur. Selye thus defined stress as the sum of all nonspecific changes caused by function or damage, including the biologic phenomenon necessary for the re-establishment of the normal resting state.⁽²³⁾

The outstanding effects of stress are observed in adrenocortical enlargement, thymicolymphatic involution and gastrointestinal ulcers. Selye and co-workers consistently observed that stress produced involutions or degenerative changes in all the organs of the body except the adrenal

cortex, which actually flourished on stress. The adrenal response was found to play a useful part in the systemic, nonspecific adaptive reaction. These investigations further showed that whenever stress was imposed on the human body, the first reaction of the body tissue was one of adaption and defence. Later on, if the stress was not removed, pathologic alterations took place in the tissue.⁽²³⁾

The excessive functional demands made upon the periodontium by the bruxing and clenching habits are often tolerated by the accommodation of oral tissues. Nevertheless they represent potentially serious threats to the periodontium where some structure has already been lost and ordinary function becomes a challenge to the survival of the dentition. In many instances bruxism and clenching are contributing factors in chronic destructive periodontal disease. The outcome of periodontal treatment is thus jeopardised by the extensive forces employed and the possibility of a relapse is increased despite attainment of apparently ideal occlusal function.⁽⁷⁾

These experimental observations led the investigators to formulate the theory of General Adaptation Syndrome (GAS) which constitutes three phases :

1. **The alarm reaction** - Reaction of the body to the sudden imposition of a stimulus of stress resulting in increased activity of the adrenal cortex.
2. **The resistance stage** - This is the period following the alarm reaction during which the body continues to resist to its maximum.
3. **The exhaustion stage** - The period following the stage of resistance when the acquired adaptation is lost due to continued stress. Thus stress acts through GAS and causes defence and damage. The defence utilises agonists and antagonists which interact on the target organ (particular tissue) and stabilise the latter by adjusting its response to injury. But stress also invariably causes some degree of damage through the GAS.

This likewise affects the target organ, though not through the humoral and nervous mediators of nonspecific defense. These responses are modified by factors extraneous to GAS, as for example, hereditary, diet, and previous exposure to stress. Thus the reaction of the target organ will depend on :

1. Specific actions of the stressors.
2. The effect of the resulting GAS and,
3. Extraneous conditioning factors.⁽²³⁾

The non-functional clenching and grinding of the teeth,

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known as bruxism has been studied since the turn of the century. Grinding of the teeth was originally reported in the literature by Marie and Pietkiewicz (1907).⁽¹⁰⁾

According to New Gould Medical Dictionary the word bruxomania is derived from the greek word brychein, meaning to grind or gnash the teeth. Thus bruxomania is defined as the grinding or pounding of the teeth as a manifestation of neurosis usually occurring during sleep. Mania derived from Greek mania defined as madness and has two meaning

1. excessive enthusiasm or excitement , a violent desire or passion.
2. a form of mental disorder marked by a sustained elevation of mood with exaggerated feelings of wellbeing, flight of ideas, delusions of greatness and psychomotor overactivity.⁽¹³⁾

However, the problem of tooth gnashing has been known since ancient times, having been mentioned in the Old Testament. The term bruxomania was changed to bruxism by Frohman⁽⁴⁾ in 1931 to describe dysfunctional jaw movement. Bruxism has also been called neuralgia traumatica and occlusal habit neurosis.⁽²⁵⁾ Drum in 1962 , suggested the use of the word parafunction.

The definition and classification of bruxism has not been universally agreed upon or standardized. This lack of agreement has accounted for confusion among reports in the literature on the incidence , therapeutic success, diagnostic criteria and damage done by bruxism.

Bruxism is the forceful rubbing together of opposing teeth, usually in a mediolateral direction and rarely in an anteroposterior direction. Clenching is the forceful application of pressures to the teeth in centric occlusion. While bruxism and clenching are different clinical entities, they may be considered together because both involve the application of considerable force to the teeth and jaws without interposition of food between opposing teeth. Both are considered nonfunctional activities in as much as they are not involved in mastication, deglutition or speech.⁽⁷⁾

Ramfjord and Ash have separated clenching from bruxism by referring to grinding in centric as clenching and to nonfunctional gnashing and grinding in eccentric excursions as bruxism.

Berlin and Dessner suggested that bruxism is an unconscious habit of clenching or grinding of the teeth and is not concerned with other activities like mastication and deglutition. Many authors have labelled those with unconscious habit as nocturnal bruxers and those with conscious habit as diurnal bruxers.⁽²⁰⁾ Olkinuora⁽¹⁵⁾ has divided bruxers into strain (stress) and non-strain (non-stress) bruxers.

Nadler presents four subclasses :

1. Local
2. Systemic

3. Psychological and
4. Occupational factors.⁽¹³⁾

The psychological, local and systemic tricotomy has been reviewed by Glaros and Rao.

Nadler also classifies under involuntary and voluntary action.⁽¹³⁾ Indeed, various classification systems of etiological factors of bruxism have been presented. For this review the classification has been simplified into two factors : 1. Psychological and 2. Occlusal. This is not to imply that other factors are not relevant, but their inclusion under the above two headings obviates the need for a separate listing.

In excellent reviews of the subject other aspects of parafunction are discussed : physiology,⁽²⁶⁾ effects⁽¹⁴⁾ and treatment.^(11,2) However, treatment of this habit requires a comprehension and appreciation of its etiological and contributing factors albeit hypothetical at times. Also since this habit effects a large percentage of the population^(3,15) with a complexity of dental and psychological considerations it is imperative to evaluate each patient on an individual basis. The fact that the effect of bruxism can be significant is well documented, it has been reported to cause mandibular displacement.⁽²¹⁾

INCIDENCE OF BRUXISM IN THE GENERAL POPULATION.

The literature has many diverse reports on the incidence of bruxism, depending on the definition used, diagnostic criteria used, and the population sampled. Reports of bruxism in general population have varied from a low of 5% to a high of 96%.⁽²²⁾

Problems with the studies carried out include the lack of differentiation of clencher from bruxers, reliance on self awareness or parental knowledge of nocturnal activity as a means of identifying bruxers, and finally the inability to take the sample as representative of the general population. Also if details of the subject selection were unclear, it again lessens the impact or validity of the study. Same is the case with no description of methodology and no differentiation between current and previous bruxers is made.⁽²²⁾

Nadler contends that in one's lifetime everyone will brux at one point or another.⁽¹³⁾

BRUXISM IN THE PERIODONTAL PATIENT POPULATION.

Among periodontal patients, the reported incidence of bruxism in the literature is higher than the general population. However, all of the previously mentioned drawbacks of incidence studies still apply; ie. lack of uniformity in definition used, varying criteria for diagnosing bruxism, nonrepresentative sample populations, poorly designed studies and the lack of a sufficient number of good studies